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South-North Migration and Trade

A Survey

Maurice Schiff

Can trade liberalization be used to deter South-North immigration? Is trade a substitute for migration? Not necessarily. Assuming that migration generates externalities, the South should liberalize trade, while the North should impose an (optimal) immigration tax.

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Summary findings

Before 1973, the labor market in Europe was tight and immigration from the South (chiefly North Africa and Southern Europe) was encouraged. But with the slowdown in growth in the mid-1970s, the rise in unemployment, and increased economic uncertainty, immigration came to be viewed as a burden by the destination countries.

The demand for migration fell, but the supply did not.

As US and EU opposition to immigration has increased, some have proposed using trade policy to deal with immigration — for example, opening their markets to exports from countries in the South and East in the hope that countries that export more goods will export fewer people. The assumption in such proposals is that trade liberalization will reduce migration — that trade is a substitute for migration.

Using both one-sector and two-sector models, Schiff examines the relationship between trade and migration, as well as the welfare implications of different trade and migration policies for both sending and receiving countries. The results are ambiguous.

Is trade a substitute for migration? Opening markets in the North and providing foreign investment and foreign

aid to the sending countries is more likely to slow down migration from Eastern Europe to the European Union than from Africa to the European Union or from Latin America to the United States. It may also worsen the skill composition of migration from Africa to the European Union and from Latin America to the United States.

Assuming migration externalities are not internalized, all groups are worse off under free migration than they are when migration is restricted. All groups lose from imposing a tariff in the South or in the North. And all groups lose from a decrease in migration costs because income in the South is not affected by migration (in one model), but social capital in the South falls, so those left behind lose.

Two results hold irrespective of the degree of internalization of the migration externalities: the South gains from trade liberalization in either the North or the South, and the North gains from imposing an immigration tax. The policy implications are clear: the South should liberalize trade, while the North should impose an (optimal) immigration tax.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to study the relationship between trade and migration. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Minerva Pateña, room N5-047, telephone 202-473-9515, fax 202-522-1159, Internet address mpatena@worldbank.org. December 1996. (55 pages)

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South-North Migration and Trade: A Survey

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South-North Migration and Trade: A Survey

*Give me your tired, your poor
Your huddled masses yearning to breathe free ...*

*Emma Lazarus
(poem at the foot of the Statue of Liberty)*

*Why should Pennsylvania, founded by the English, become a colony of
aliens who will shortly become so numerous as to Germanize us instead
of us Anglifying them?*

*Benjamin Franklin
(1751)*

*King Henri-le Grand ... whose kingdom was known by all as a land of
asylum ... passed an ordinance ... that those who were willing to live in
the catholic religion ... would be allowed to remain in his Estates ...
As for the others, the necessary ships would be made available ...*

*Cardinal de Richelieu, Memoires
(On the expulsion of the Moors from Spain; unofficial translation)*

1. Introduction

Opposition to immigration in the EU and the U.S. has increased in recent years (ILO, 1992; World Bank World Development Report, 1995). Before 1973, Europe was characterized by a tight labor market, and immigration from the South, mainly from North Africa and Southern Europe, was encouraged. This situation changed in the mid-1970s. With the slowdown in growth, rise in unemployment and increased economic uncertainty, immigration came to be viewed as a burden by the destination countries. But while migration demand fell, supply did not.

Data from SOPEMI indicate that gross migration flows increased significantly in the 1980s, with an increase in Germany of close to one hundred percent between 1981-85 and 1989-90. Moreover, early sending countries - such as Italy and Spain - became destination countries and started absorbing increasingly large immigration flows (Massey, 1993). And migration from Eastern Europe increased

following the collapse of the former Soviet Union. As a consequence, parties advocating strong restrictions on immigration have made important gains in recent years.

In the U.S., data from the OECD (1994) indicate that the fraction of foreign born in the total population increased from 4.7 percent in 1970 to 6.2 percent in 1980 and to 7.9 percent in 1990. And data from the U.S. Immigration and Naturalization Service (1994) and the U.S. Bureau of the Census (1994) indicate that the contribution of immigration to population growth increased from 13 percent in the 1960s to 19 percent in the 1970s and to 25 percent in the 1980s.

Several border states have become impatient with the federal government's lack of success in stopping illegal immigration. California, Texas and Florida have sued the federal government for reimbursement of the cost of public services provided to illegal immigrants. And California recently passed Proposition 187 which denies illegal immigrants access to non-emergency services. Even though the suits were thrown out of court and Proposition 187 is not actually being implemented, it is evident that a change in attitude towards immigration has taken place. The U.S. Congress recently passed laws tightening eligibility criteria for legal immigration. Immigration was also a major issue in the 1996 Republican primaries.

Immigration has also become an issue in Asia. Starting in the 1970s, immigration intensified, and reverse migration took place in a number of fast-growing countries in the 1980s, including Japan, the newly industrialized countries of the Far East and Malaysia (Bohning and Schloeter-Paredes, 1994, p. 1).

The change in attitude towards immigration at the national level has also found expression at UN agencies. For instance, in 1949, the International Labor Organization recommended attracting suitable labor from labor-abundant countries as a means of dealing with the excess-demand for labor in the rich countries (ILO, 1949), but by the mid-1980s the ILO was recommending that the rich receiving countries should "... when such workers come from developing countries, endeavour to cooperate more fully in the development of such countries by appropriate intensified capital movements, the expansion of trade, the

transfer of technical knowledge ..." (ILO, 1984). And ILO (1994) also recommended that rich countries provide foreign assistance to developing countries in order to reduce emigration pressure.

Using trade policy in order to deal with the migration problem has also been considered by the EU and the U.S. EU policy-makers have expressed the view that opening their markets to exports from countries in the South and East will reduce the pressure to migrate. Similarly, during the debate on NAFTA, Presidents Salinas and Bush argued that NAFTA would help Mexico export more goods and fewer people.

These statements and the recommendations of ILO (1984) are based on the view that by raising the level of exports from the source countries, trade liberalization will lower migration. In other words, the assumption is that trade and migration are substitutes.¹ Others, including Markusen (1983), have claimed that migration and trade may be complements.

The remainder of the paper is organized as follows. The relationship between trade and migration is examined in Section 2. Theory is covered in Sub-section 2.A and evidence in Sub-section 2.B. The welfare implications for both sending and receiving countries of migration and of alternative trade and migration policies are examined in Section 3. The analysis is carried out in the framework of one-sector models in Sub-section 3.A and of two-sector models in Sub-section 3.B. Section 4 provides concluding comments.

Note that this paper does not provide a survey of theories of migration per se but rather focusses mainly on the link between migration and trade. However, it does draw on alternative migration theories when necessary. Massey (1993) provides an excellent review of alternative theories of international migration. Note also that this paper deals only with economically motivated migration. On analyses of the problems of refugees, see for instance Zolberg et al. (1989) and Suhrke (1994).

¹The ILO (1984) and ILO (1994) recommendations are also based on the assumption that foreign aid and investment are substitutes with migration.

2. Positive Aspects

A. Theory

In a classic paper, Mundell (1957) showed in the 2x2x2 Heckscher-Ohlin framework that trade and international factor mobility are substitutes in the sense that either achieves the same world equilibrium and that an increase in one lowers the other one. The Heckscher-Ohlin model, coupled with the assumption of the North (South) being abundant in capital (labor), provides a useful analytical framework for explaining North-South trade.² Adding international labor mobility, substitution between migration and trade obtains since trade liberalization in either the North or the South leads to more trade and - by reducing the North-South wage differential - to less migration. And adding capital mobility, substitution obtains between capital flows and migration.

This framework is implicit in much of the policy analysis of migration in receiving countries, as for instance in CEPR (1992) and in Zimmerman's work on East-West migration (e.g., Zimmerman 1993, 1995). The CEPR study finds that by moving to a liberal trade regime between the EU and the Central and Eastern European countries (CEEC), demand for labor in the CEEC would rise by 6-10 percent, capital flows to the CEEC would rise, and both would lower emigration from the CEEC to the EU. Similarly, Zimmerman (1993) argues that the substantial migration pressure from the East and South can be reduced by exporting capital and liberalizing trade. The same recommendation is made by Layard et al. (1992). These policy prescriptions are based on an assumption of substitution between trade and migration, and between movements of capital and labor. As is argued later, such substitution seems more likely in the case of East-West than in the case of North-South relations.

²In the case of Morocco, Faini and de Melo (1995) find that sectoral employment per unit of value added increases as the share of exports in value added increases. This supports the assumption of relative factor endowment as the basis for comparative advantage in North-South trade.

On the other hand, several trade-theoretic papers show that if some of the assumptions underlying the Heckscher-Ohlin model are changed, trade and migration may be complements. This issue is examined in Markusen (1983) and Wong (1983).³

Markusen (1983) shows that complementarity between migration and trade obtains if one imposes identical factor endowments in both countries but relaxes one of the following assumptions of the Heckscher-Ohlin model: (a) constant returns to scale, (b) identical technologies, (c) perfect competition, and (d) no domestic distortions. Then, free trade does not result in factor-price equalization. The free trade equilibrium in the absence of factor mobility is characterized by the fact that the relatively high-priced factor in each country is the one used intensively in the export good. Hence, factor mobility raises (lowers) the supply of the factor used intensively in the export (import) good and results in an increase in the volume of trade.

Markusen relaxes assumption (a) by assuming economies of scale which are external to firms, so that perfect competition holds. Krugman (1979) assumes economies of scale which are internal to firms so that markets are imperfectly competitive. He assumes monopolistic competition and taste for variety, and shows that trade and migration are substitutes as either one generates economies of scale. The same result is obtained by Matsuyama (1995). Panagariya (1992) shows in a model with economies of scale that movement of skilled labor and capital can lead to more trade while the impact of movement of unskilled labor on trade is ambiguous. Thus, whether trade and migration are substitutes or complements under economies of scale depends on the specific model used.

Secondly, Markusen (1983) relaxes assumption (b) by assuming Hicks-neutral technological superiority in one country in one sector only. If Hicks-neutral technological superiority applies across the board rather than only in one sector, i.e., if

³Other studies which have examined this issue include Jones and Neary (1994), Razin and Sadka (1995), Markusen and Melvin (1981), and Markusen and Svensson (1985).

$$\begin{aligned} Q_s^i &= f_i(K_i^s, L_i^s); i = 1, 2; s = \text{South}, \\ Q_i^n &= \lambda f_i(K_i^n, L_i^n), \lambda > 1; i = 1, 2; n = \text{North}, \end{aligned} \quad (1)$$

then, given constant returns to scale, $Q_i^n = f_i(\lambda K_i^n, \lambda^n L_i^n)$. Thus, a uniform Hicks-neutral technological advantage in both sectors is equivalent to a uniform increase in all the North's factor endowments, except for the fact that factor prices are not equalized under free trade.⁴ And trade liberalization in the North or the South reduces the North-South wage differential and results in substitution between trade and migration.

Migration typically occurs from lower-income to higher-income countries or from South to North. If the higher income is due to technological superiority in the North, it is likely that the technological superiority applies across the board. For instance, one would expect the U.S. to have a technological advantage over Mexico in both agriculture and industry.⁵ Alternatively, one can think of the North as being endowed with superior economic and political institutions which raise the productivity of all factors (Olson, 1996). Thus, as in the case of economies of scale, whether technological differences result in substitution or complementarity between migration and trade depends on how they are modeled.

Alternatively, consider the issue of migration costs and financing constraints. Migration costs may be large as well as difficult to finance for potential emigrants from developing countries (see Section 2.B for evidence). Migration costs include travel costs, the cost of obtaining information on the cheapest and safest migration routes and on job and housing opportunities in the destination country, the cost of

⁴In the phraseology of Dixit and Norman (1980, p. 148), a two-country model where one country has a general technological advantage and where each country's comparative advantage depends on relative factor endowments is referred to as a 'Ricardian' Heckscher-Ohlin model. In that model, both factor prices are higher in the North under free trade (though they are equalized in terms of 'efficiency units').

⁵Trefler (1995) argues that the Heckscher-Ohlin model does a poor job empirically and that the model which performs best is a modified Heckscher-Ohlin model with **neutral** international technological differences and Armington-type home bias in consumption.

obtaining various documents (passport, visa, work permit, etc.), the cost of living in the destination country until a job is found, and for illegal migrants the cost of paying someone (so-called 'coyotes' in the case of migration from Mexico to the U.S.) for helping with clandestine entry into the destination country. There are also emotional costs and social and cultural barriers associated with migration. These are unrelated to the ability to pay and are examined in Section 3.

Many potential migrants in developing countries have little or no collateral and cannot obtain the necessary credit to finance their migration costs. As they are unable to borrow money in the formal credit market based on their higher expected future earnings, especially since these earnings are expected to materialize in another country, workers who want to emigrate must for the most part rely on their own savings to finance their migration. They might have access to credit in the informal market at high interest rates, but these rates are often prohibitive in the sense that the net present value of the migration project is likely to be negative at such rates. In some cases, members of the family in the home or destination country may help with migration costs. In the former case, it is often done within the framework of an implicit contract entailing remittances from the emigrant to his/her family.

Complementarity between migration and trade can be shown in a Heckscher-Ohlin model with migration costs and financing constraints (Schiff, 1994, 1995). In a two-period model, individuals live in the South in the first period and decide, based on financing constraints and expected benefits, whether or not to migrate and live in the North in the second period (Lopez and Schiff, 1996). For simplicity, the issue is examined here in a one-period framework. Assume identical individuals in the South, with

$$(a) \quad W_o < W_s < W_o + C, \quad (2)$$

$$(b) \quad W_s < W_n - C,$$

where W_s is the actual wage in the South, W_o is the subsistence wage, C is the cost of migration

and W_n is the wage in the North. The South is relatively labor abundant. $W_s < W_n$ because of protection in the South, in the North or in both places. Equation (2b) indicates that people in the South would like to emigrate since the wage they earn, W_s , is lower than the wage in the North net of migration costs, $W_n - C$. Assume potential migrants have no access to credit. Equation (2a) indicates that the wage rate is higher than the subsistence wage but is smaller than the sum of the subsistence wage and the cost of migration. Thus, people cannot pay the migration costs and no migration takes place.

If trade is liberalized in the South, W_s increases to W_s' . If the South is small, W_n is unaffected. As long as trade is not fully liberalized in the South or protection exists in the North, W_s' remains lower than W_n . There are three possibilities:

- (a) $W_s' < W_o + C$,
 - (b) $W_o + C < W_s' < W_n - C$,
 - (c) $W_n - C < W_s' < W_n$.
- (3)

Under outcome (a), the financing constraint continues to be binding and no migration takes place. Under outcome (b), migration can be financed and is beneficial. Thus, migration does take place. Under outcome (c), the wage in the South increases to the point where there is no incentive to migrate. Consequently, trade liberalization has no impact on migration under scenarios (a) and © and has a positive impact under scenario (b).⁶

Lopez and Schiff (1995) examine the relationship between migration and trade in a two-period Heckscher-Ohlin model with capital and two types of labor (skilled and unskilled), migration costs and

⁶Schiff (1995) also examined the impact of trade policy on migration under endogenous migration costs. Carrington, Detragiache and Vishwanath (1996) provide an empirical analysis of migration with endogenous moving costs. They find that the assumption that migration costs decrease with the number of migrants already settled in the place of destination is more consistent with historical evidence from the 'Great Black Migration' of 1915 to 1960 than alternative migration models.

financing constraints. Workers also differ in their 'migration capital', with migration costs varying according to the ability to migrate. Unskilled workers are constrained by migration costs while skilled workers are 'constrained' by the North-South wage differential and not by migration costs.

With trade liberalization and an increase in wage rates, the incentive for skilled labor to migrate falls while the ability of unskilled labor to pay for the migration costs increases. The authors make two type of comparisons: over time and across countries. In the cross-country comparison, assume Country A has a lower degree of protection of its importables than Country B. Wages in Country A are higher than in Country B. More unskilled and fewer skilled workers migrate in Country A than in Country B. Thus, the country with a more liberal trade regime ends up with a worse average skill level of migrants and with a better average skill level of the labor force, while the impact on the total level of migration is ambiguous,

In the comparison over time, trade liberalization results in an increase in the migration of unskilled labor. For skilled workers, there is no migration effect. Even though the higher wage lowers their incentive to migrate, migration already took place. Some skilled migrants who left before trade liberalization took place would not have migrated had they known about the change in trade policy. However, they will not return despite the wage increase because wages in the North remain higher than in the South and because of the cost of return migration. The net effect is an increase in migration and in the average quality of the labor force in the South. On the other hand, an increase in protection lowers wages in the South, raises emigration of the skilled and has no impact on the unskilled, with a worsening of the average skill level in the South. Migration increases with any change in trade policy in this case.⁷

Note that what has been said about the impact of trade liberalization on migration under

⁷The comparison over time is implicitly based on the assumption of constant population. In the case of population growth which exactly replaces the migrants before trade liberalization takes place, the impact is the same as in the cross-country case.

migration costs and financing constraints holds for foreign aid as well (Schiff, 1994). If foreign aid raises labor income, then it may have the opposite of the intended effect and result in an increase in migration, especially of lower-income, less-skilled workers. Bhagwati (1984) notes this possibility in the case of foreign aid and foreign investment. The same holds if foreign aid is used to acquire skills which are of use in the North (Martin, 1994). What about the interaction effect of foreign aid and trade liberalization? If foreign aid results in a relaxation of the financing constraint on migration, then the degree of substitution between trade and migration will increase, i.e., trade liberalization will result in less migration than in the absence of foreign aid. In other words, the interaction effect is negative (Schiff, 1994).

Following the 1973 oil shock and subsequent slowdown in labor demand in the EU, authorities in Morocco did help slow down the outflow of migrants, for instance by delaying the delivery of passports. Foreign aid has two opposite effects on migration if it helps obtain the South's cooperation in controlling emigration: it raises the cost of emigration as well as the ability to pay for it. In that case, the net impact of foreign aid is ambiguous. In the absence of financing constraints, foreign aid unambiguously results in a slowdown in migration. Thus, foreign aid may have the unintended effect of slowing down the emigration of skilled workers rather than of unskilled workers.

Remittances play an important role in a number of developing countries. Swamy (1981) reports for the years 1978-1979 that the ratio of remittances to merchandise exports was 0.51 for Morocco, 0.77 for Pakistan and Turkey, 0.89 for Egypt and 70.91 for the Yemen Arab Republic. Data from the 1995 World Bank World Development Report show ratios between 25 and 50 percent in a large number of countries, including Bangladesh, Burkina Faso, Jamaica, Malawi, Pakistan, Sri Lanka and Sudan. If potential migrants are subject to financing constraints, remittances from past emigrants are likely to have a positive impact on migration (see Hatton and Williamson, 1992; and O'Rourke and Williamson, 1995). Previous migration flows may also help by reducing migration costs.

Rauch (1991, 1995) obtains complementarity between migration and trade in a model with international trade costs and 'social capital' (which is defined here as the network of links immigrants have with their home country). Migration in the presence of social capital is examined in detail in Section 3. Rauch claims that migration leads to increased trade because the links between immigrants and their home country lowers the cost of international trade.

Russell and Teitelbaum (1992), Martin (1993) and the U.S. Commission for the Study of International Migration (1990) claim that migration and trade may be complements in the short run and substitutes in the long run. These studies assert that there is a migration 'hump', with complementarity as trade is first liberalized, and substitution as liberalization continues. In fact, they do not examine the relationship between migration and trade per se but rather between migration and income (or wages). The migration 'hump' can be explained by the fact that constraints to financing migration dominate at low income levels while wage differentials are the binding constraint at higher income levels. Russell and Teitelbaum (1992) also note that income growth is typically associated with urbanization, and that - based on existing evidence - urban people are more likely to emigrate because of better information, better access to transport, etc. Thus, higher income may result in lower migration costs as well as a greater ability to pay for them.

In a number of developing countries, the most protected sectors are labor-intensive import-substituting smallholder agricultural sectors. Notable cases are the wheat sector in Morocco and the maize sector in Mexico, where protection has been used to support the rural poor. In those cases, trade liberalization may result in a decrease in the demand for labor and a fall in the wage rate. This issue is examined in a three sector-three goods model in Schiff (1995), who obtains substitution between trade and migration if constraints on financing migration costs are binding and complementarity otherwise.

Stark and Yitzhaki (1988), Stark and Taylor (1989, 1991) and Stark (1991) have examined migration as a response to 'relative deprivation'. They argue that people migrate in order to increase their

income or their family's income relative to the income of some reference group. If the distribution of income improves (worsens) as a result of trade liberalization, migration motivated by relative deprivation will fall (increase), and trade and migration motivated by relative deprivation will be substitutes (complements).

Finally, a word on economic uncertainty. The wave of liberalization episodes which started in developing countries in the early 1980s were accompanied by debt renegotiation, macroeconomic stabilization, and a return of private capital inflows. Thus, recent reforms have led to a reduction in economic uncertainty. Abstracting from the impact of changes in income level or growth, what is the expected impact of the fall in uncertainty on migration?

Migration is an investment with unrecoverable costs.⁸ Consequently under risk neutrality, there is an option value of waiting to migrate which increases with the degree of uncertainty about the evolution of income at home and abroad (Burda 1993, 1995). The decrease in uncertainty lowers the option value of waiting and should result in a (temporary) increase in emigration.⁹ On the other hand, assuming risk aversion, increased economic stability improves welfare at home and reduces the incentive to emigrate. There are thus two opposite effects on migration, and the net effect of reduced uncertainty in the source country is ambiguous a priori, at least in the short run. In the long run, the negative migration effect of reduced economic uncertainty at home should dominate. On the other hand, if uncertainty falls in the destination country - as in the Gulf countries after the Gulf War - then both effects result in increased migration.

⁸The seminal paper treating migration as an investment is Sjaastad (1962).

⁹This issue seems likely to be important for South-North migration because incomes are low in the South and migration costs are high. Anecdotal evidence on migration costs (such as Polish workers entering Belgium on a tourist visa to work in construction and returning home to get a new visa every few months) suggests that this issue is likely to be less relevant for East-West migration within Europe, the area to which Burda has applied the theory.

B. Evidence

In theory, financing constraints and migration costs can result in complementarity between trade and migration. How important are these factors in the context of South-North migration?

Evidence shows that migration costs may account for a large share of the income of potential migrants from developing countries. Adams (1996) reports high migration costs to the Gulf for potential emigrants from Pakistan. He finds that the average cost of migration for an emigrant from rural Pakistan to Saudi Arabia or Kuwait was Rs 21,000 or U.S. \$1,300 in 1986-89. Data indicate that this cost constituted an effective constraint to migration for potential migrants in the poorer households.

Adams (1991) obtains similar results in the case of Egypt. He finds that the average cost of migrating from rural Egypt to Iraq - including the subsistence cost required for the two-month period that was necessary on average to find a job in Iraq - was close to U.S. \$500. Because of the cost of obtaining a number of expensive permits, the migration cost to Saudi Arabia was about U.S. \$1,000 or twice the cost of migrating to Iraq. These figures are extremely high considering that the average monthly wage for the people surveyed was only U.S. \$65. Thus, the migration cost to Saudi Arabia (Iraq) was equivalent to a fifteen (eight) month salary for these (potential) emigrants, a sum which is not easy to accumulate at such a low income level.

A study on Morocco (World Bank, 1994) has shown that Moroccan emigrants are essentially not coming from the income group below the poverty level, which suggests that constraints associated with financing of migration costs (and possibly associated with low skill levels as well) may be binding. A similar finding is obtained by Freeman (1993) and Funkhouse (1992) for migration from El Salvador to the U.S.

In the case of Mexico, I estimated several regressions of undocumented migration from Mexico to the U.S. over the period 1964-1991. In addition to alternative labor income variables, explanatory variables include the U.S. unemployment rate (UN), the log of the stock of immigrants (LNSTK), and the

number of apprehensions. The latter was not significant in any of the regressions, probably because undocumented immigrants can easily attempt to cross the border again after being caught. The first regression uses the Mexican agricultural wage rate deflated by the Mexican CPI (MEXAGW) as the labor income variable, the second uses the U.S. agricultural wage rate deflated by the U.S. CPI (USAGW), and the third uses the difference between the two (DIF). The results are presented in Table 1, with t-values in parenthesis.

TABLE 1
Mexico-U.S Migration of Undocumented Workers

	UN	LNSTK	MEXAGW	USAGW	DIF	R ²	F-value	No. of observ.
(1)	-.78	1.04	.84	-	-	.92	93.3	28
	(-2.03)	(11.6)	(3.61)					
(2)	-.73	.99	-	3.48	-	.86	87.6	28
	(-1.92)	(9.84)		(2.97)				
(3)	-.89	.98	-	-	1.86	.93	101.3	28
	(-2.35)	(10.6)			(3.99)			

Data source: ILO (Yearbook); IMF (International Financial Statistics); IADB (Statistical Abstract of Latin America).

Table 1 shows that the U.S. unemployment rate has a negative impact on migration from Mexico. As found in other studies (e.g., Taylor, 1987), emigration falls as the likelihood of finding a job in the destination country decreases. The second column indicates that the stock of past immigrants has a positive impact on migration. This may reflect the help immigrants obtain from preceding waves of immigrants with information, housing, jobs and possibly with financing of direct migration costs.

Our main interest is with the impact of wages on migration. The regressions indicate that

migration is positively associated with agricultural wages in Mexico, with agricultural wages in the U.S. and with the difference between U.S. and Mexican agricultural wages. The first regression provides support for the hypothesis that the financing constraint may be playing an important role in the decision to migrate from rural Mexico to the U.S.¹⁰ The lower coefficient for Mexican wages than for U.S. wages may reflect the fact that the former is the result of two opposing forces. A higher Mexican wage lowers the incentive to migrate but raises the ability to finance migration costs. The positive coefficient indicates that the latter effect may be dominant.

Some additional evidence is available on the relationship between Mexican migration to the U.S. on the one hand and wages and trade on the other. Morrison and Zabin (1994) and Zabin and Hughes (1993) also found a positive relation between Mexican wages and migration to the U.S. Furthermore, Morrison and Zabin found that Mexico's trade reform initiated in 1985 had a positive impact on migration to the U.S. The reform led to a boom in agricultural exports, mainly fruits and vegetables produced in the North of Mexico. This resulted in an increase in labor demand in the North and in a flow of seasonal contract workers from the South whose migration costs were generally paid by the employers. Over time, as they learned of opportunities across the border, many of these workers emigrated to the U.S.

Robinson et al. (1991) use a CGE model in order to simulate the impact of NAFTA on migration from Mexico to the U.S. They find that at the end of the transition period, over 800 thousand people will lose their job in the maize sector, a highly protected labor-intensive sector, with 25 percent of those people finding jobs in other sectors (including in the expanding sector of agricultural exports) and 75 percent emigrating to the U.S. Migration costs are not a binding constraint in this model.

In a regression of the probability to migrate from rural Mexico to the U.S., Taylor (1987) uses household income as a proxy for the rural household's ability to finance the costs of illegal migration. He

¹⁰Regressions with both the Mexican and the U.S. agricultural wage rate did not perform well, possibly because of collinearity. Correction for autocorrelation of residuals did not improve the estimation results.

obtains a positive but declining impact of household income on the probability to migrate. This confirms the findings of Lopez and Schiff (1995) that the constraint on financing migration costs plays a significant role and is strongest at lower income levels.

On the other hand, Hanson and Spilimbergo (1996) find for the period 1976-1995 that a 10 percent decrease in the Mexican real wage leads to a 7.5 to 8.8 percent increase in apprehensions of illegal migrants at the border. They find that border apprehensions are especially higher in the month following a large devaluation of the peso or a decrease in the Mexican real wage due to other reasons. This result indicates that labor income and migration are substitutes and that financing migration costs is not a major constraint in the case of illegal migration from Mexico to the U.S.

The finding of Hanson and Spilimbergo (1996) could be explained if the short-run increase in illegal migration were essentially due to an increase in migration of labor coming from the Northern part of Mexico. Workers in the North tend to have higher wages and lower information and transport costs than workers in the South of the country. Thus, it is possible that incentives are the determining factor in the decision to migrate for people living in the North while migration costs are the determining factor for those living in the South.

If employers pay for the cost of migration, then trade and migration would be expected to be substitutes. For instance, the U.S. signed the Caribbean Basin Initiative in 1984 which offered unilateral trade preferences to Caribbean and Central American countries. However, in order to protect its domestic sugar producers, the U.S. introduced import quotas in 1985. Sassen (1988) estimates that the Caribbean sugar exports fell from US\$ 544 million in 1981 to 97 million by 1988, with a loss of 40,000 jobs. And American sugar companies have had to import thousands of seasonal workers from the Caribbean to cut sugar cane, a task that Americans are unwilling to perform.

What about the experience with trade and migration from 1870 to 1910? The Heckscher-Ohlin model with migration costs and financing constraints does a good job in explaining trade flows, migration

flows and wage convergence which occurred during that period in Europe, Australia and the Americas. First, Williamson (1995) shows that European wages converged to American wages and that Scandinavian wages converged to British wages, with Swedish wages being about half the level of British wages in 1870 and catching up with British wages by 1910. Convergence was caused by economic integration. The latter occurred both because of a fall in transport costs and because of trade liberalization. These led to a dramatic increase in the volume of international trade and in factor movements.

O'Rourke, Taylor and Williamson (1996) argue that these changes help explain why the ratio of wages to land rents fell by half in the U.S. between 1870 and 1913, fell by 75 percent in Australia, more than doubled in Britain and Sweden, and more than quintupled in Ireland. Thus, lower transport costs and trade liberalization led everywhere to an increase in the relative price of the abundant factor. And where trade liberalization was weaker, as in France and Germany, the increase in the ratio of wages to land rents was smaller. However, increased trade alone does not explain why Swedish wages converged on those of Britain or why the Irish wage to land rent ratio increased dramatically more than elsewhere. This can be explained by the massive emigration which took place during that period.

Hatton and Williamson (1992) and O'Rourke and Williamson (1995) note that emigration from Europe to the Americas in the late 19th century and early 20th century did not come from the poorest (Southern) European countries but rather from relatively richer countries even though wage differentials were larger in the former. For instance, Irish emigration was massive (45 percent of the labor force between 1870 and 1910) and accounts for a significant proportion of the catch-up or degree of convergence of Irish wages to U.S. wages. Scandinavian migration was large as well (about 20 percent of the labor force between 1870 and 1910). On the other hand, emigration from Spain and Portugal was small (5-6 percent of the labor force between 1870 and 1910), even though wages were lowest in the Iberian peninsula and emigrants would have benefitted the most from mass migration.

The authors explain this phenomenon by the fact that labor in the poorest parts of the European periphery (Spain and Portugal) could not finance the move to the Americas while those in the better-off parts of the periphery (Ireland and Scandinavia) could. Moreover, Ireland and Scandinavia - who sent emigrants out in the 1840s and 1850s - were able to use the remittances from the early emigrants in order to finance the move of later migrant waves.¹¹

Faini and Venturini (1993b) examine the relationship between income and migration from the early 1960s from Southern to Northern Europe and find complementarity at low levels of income and substitution at higher levels. They estimate a regression of per capita migration from Southern European sending countries. Among explanatory variables, they use per capita income (Y) and per capita income squared (Y^2) in the sending countries. They obtain a positive coefficient for Y and a negative coefficient for Y^2 in the case of Greece, Portugal and Turkey, indicating that migration increases with income at lower income levels and falls with income at higher income levels in those countries. In the case of Spain, the coefficient for Y^2 was not significant, and the coefficient for Y (in a regression without Y^2) was negative. Faini (1991) obtained similar results for Southern Italy. The findings for Italy and Spain suggest that at the beginning of the sample period, these countries had already reached an income level where the migration effect of an increase in income is unambiguously negative.

Faini and Venturini argue that financing constraints may explain the positive impact of income on migration at low income levels. To explain the negative impact at higher incomes, they posit - as in Hill (1987) - that people prefer to live in their own country, and that as income rises they are less willing to pay the emotional cost of living in a strange culture among foreigners and sacrifice the benefits of living among family and friends. Preference for living in one's own country, which is related to the concept of social capital, is examined in Section 3.

¹¹For an analysis of Italian migration in the pre-war period, see Faini and Venturini (1993a).

Other examples of a changing relationship between income and migration over time are South Korea, Malaysia, and Taiwan, three very successful and rapidly growing exporting countries. These countries experienced large rates of net emigration until quite recently. With the substantially higher incomes obtained in recent years, these countries have become net immigration countries (Bohning and Schloeter-Paredes, 1994). Also, it is interesting to note that China's rapid economic growth has been associated with more rather than with less emigration, though this may also be due in part to a relaxation of controls on labor mobility. It seems safe to speculate that, as income continues to rise, the ability-to-pay constraint will be relaxed at some point, incentives will become the dominant factor, and migration will start decreasing with income.

Finally, Reed (1994) examines migration between the Northeast of Brazil, the country's poorest region, and Sao Paulo, the country's largest and richest city located in the South. She finds that adverse economic shocks in the Northeast deter migration while family wealth promotes it, and concludes that migration from that poor area is limited by credit constraints. She also finds that the negative impact of credit constraints is weaker for individuals with more schooling. This confirms the findings of Lopez and Schiff (1996) that credit constraints and migration costs may be binding for the poorer potential migrants, while the wage differential is a more important determinant of migration in the case of more educated and skilled labor.¹²

To conclude, whether trade and migration are substitutes or complements cannot be determined a priori. It depends on migration costs, credit constraints, and on the potential migrant's income and skills. The higher the costs of migration, the tighter the credit constraints, and the lower the potential migrants' income and skills, the more likely it is that migration and trade will be complements.

¹²On the impact on trade of immigrant links to their home country, Gould (1994) shows for the U.S. that they have been important in increasing bilateral trade flows with immigrants' home countries. And Wong (1988) also shows for the U.S. in 1948-1983 that labor inflow tends to be associated with more trade.

Consequently, complementarity is likely to dominate in the case of South-North migration (from Latin America to the U.S. and from Africa to the EU) while complementarity is likely to dominate in the case of East-West migration (from Eastern Europe to the EU) because incomes and skills are typically lower in the South than in the East (eastern part of Europe) and migration costs are typically higher.¹³ Moreover, though migration costs may be a binding constraint for unskilled labor in the South, that constraint need not be binding for skilled labor. If so, trade liberalization between the EU and North and sub-Saharan African countries, as well as between the U.S. and Latin American countries, is likely to result in increased migration and/or in a worsening of the migrants' skill composition.¹⁴

Note that in cases of complementarity (substitution) between migration and trade, one is likely to find complementarity (substitution) between migration and capital flows as well. The reason is that capital flows from North to South raise wages in the South, and thus are likely to lead to more (less) migration in the presence (absence) of migration costs and financing constraints (Schiff, 1994).

3. Normative Aspects

One problem associated with the analysis of the welfare impact of migration is that the population over which welfare is to be defined is ambiguous (Bhagwati and Rodriguez, 1975; Bhagwati, 1979). Should migrants be included in the population of the sending country, of the receiving country, or should they be considered as a separate group? The answer may depend on the circumstances.

In the case of short-term or temporary migration, as with 'gastarbeiters' in Switzerland or Asian

¹³The EC negotiated an association agreement with Poland in 1991. Poland sought greater access for its agricultural products but did not obtain it. Bohning and Schloeter-Paredes (1994) conclude that "...the EC was signalling that Polish workers were preferred to Polish goods". This seems to support the contention that migration costs are not an effective constraint on migration and that trade and migration are substitutes within Europe.

¹⁴Though one might expect the financing of migration costs to be a binding constraint for South-North migration in general, this need not be true for regions in the South which are close to the North, as for instance from northern Mexico to the U.S. or from northern Morocco (Tunisia) to Spain (Italy).

and Middle-Eastern workers in the Gulf, it would seem to make sense to classify migrants as part of the sending country. However, temporary migrants may gradually become permanent, as with 'gastarbeiters' in Germany. On the other hand, if migration is permanent, it seems reasonable to classify migrants as part of the destination country. But even in such cases, permanent migrants may retain ties to the country of origin and sometimes even maintain sending-country or dual citizenship. Consequently, I examine the welfare implications of migration under alternative assumptions on the population to which migrants belong.

The welfare impact of migration in the receiving and sending countries varies according to the presence or absence of distortions, fiscal and other externalities (including congestion and cultural and social externalities), and diminishing returns. Much of the analysis of the welfare impact of migration has been carried out in the framework of one-sector models where diminishing returns are present. This is reported in Section A. Section B examines the welfare impact of migration within the framework of two-sector models. Such models provide a natural setting to study the effects of trade policy on welfare in the presence of migration.

A. One-Sector Model

Assume a model with one good and two factors, labor and capital, perfect competition, and an aggregate production function $Y = f(K, L)$. What is the impact of labor migration?

i) Small migration flow

Assume that one person migrates North, does not remit, and there are no distortions in the economy. The income of those remaining in the South is unchanged because the migrant was paid his/her marginal product and did not generate a surplus. In other words, the benefit to society of hiring

this person was exactly equal to society's cost, and the welfare of those left behind is unchanged.¹⁵

Assume that migration is voluntary and that the migrant gains. If the emigrant's welfare is considered part of the South's national welfare or if he/she sends remittances to the South, then the South's national welfare rises.

If distortions exist, then those left behind may gain or lose. For instance, under any form of labor tax, labor's marginal product is higher than the net-of-tax wage rate, and emigration by one person results in a loss for those left behind. This holds if the tax is purely redistributive. However, assume the tax is used to pay for public services. If the tax equals (is less than) (is higher than) the cost of the emigrant's consumption of public services, then the welfare of those left behind is unchanged (increases) (decreases).

In the case of a monopsonistic labor market, the wage paid is also lower than labor's marginal product, and emigration results in a loss for those left behind. If the migrant welfare is considered part of the South's national welfare or if he/she sends remittances home, then the welfare impact under labor taxes or monopsonistic labor markets is ambiguous.

What about the effect in the destination country? In the absence of distortions, one immigrant has no impact on the North's welfare. If the immigrant's welfare is considered part of the North's national welfare, then the North gains since the immigrant is better off. Alternatively, assume the migrant's welfare is considered part of the South's national welfare. Most countries of the North have labor taxes and provide public services. Whether one immigrant creates a gain or loss for the North is unclear a priori. There is a presumption that unskilled migrants pay less than the average level of taxes and

¹⁵The same is true for a 'small' inflow of capital, where the payment to the foreign owner equals the capital inflow's marginal product.

consume more than the average level of public services.¹⁶ The North would lose in that case.¹⁷

On the other hand, it is cheaper for the North to receive human capital produced in the South than to subsidize its production. While taxes on the North's skilled native workers have to be high enough to repay the educational subsidies they received in the past, taxes paid by immigrants with similar skills and income imply a surplus for the North if these skills were acquired in the South. Moreover, for those migrants who return home before retirement age, the North gains the contributions migrants make to pension schemes.¹⁸

What about illegal immigrants? They do not pay income tax and employers typically do not pay labor taxes on their behalf. On the other hand, given their precarious legal status and lack of access to the general labor market, they are often paid less than the value of their marginal product. And they may have less access than natives and legal immigrants to various public services (such as health).

Thus, in the absence of distortions and fiscal externalities, a small migration flow has no impact on welfare either in the North or in the South. If the migrant - who gains - remits or is considered part of the South, the South gains. And if there are distortions or fiscal externalities, the effect is ambiguous.

ii) Large migration flows

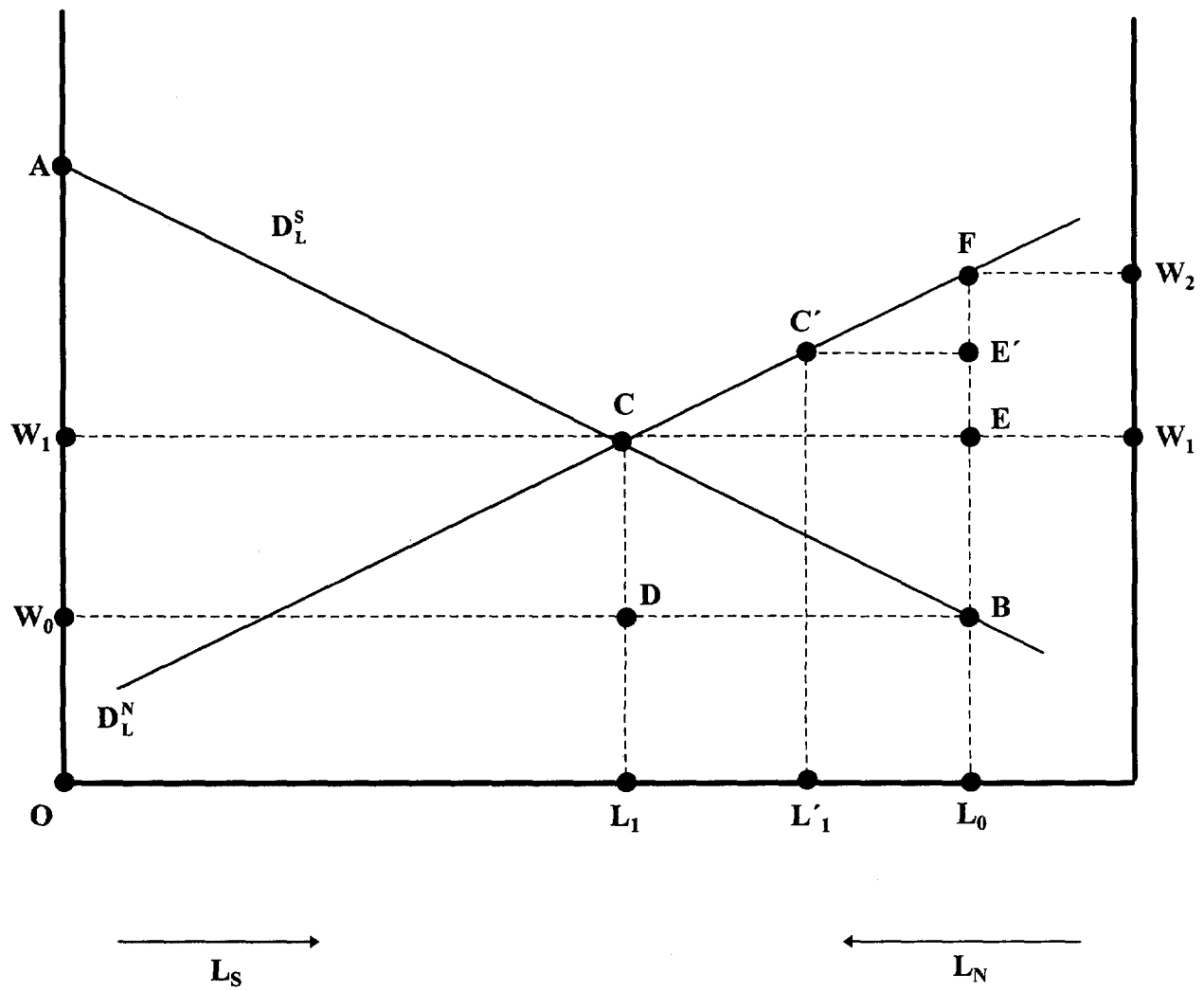
A large migration flow will generate a welfare loss for the South and a gain for the North even in the absence of distortions or fiscal externalities. The issue is examined with the help of Figure 1. The South is endowed with a level L_0 of labor. Equilibrium is at point B where labor's marginal product is W_0

¹⁶Section 3.vi below presents evidence, which is mixed.

¹⁷For an analysis of the welfare impact of migration under capital mobility and redistributive tax policy and of the benefits of fiscal centralization in a model of Nash non-cooperative equilibria in tax policies, see Wellisch and Wildasin (1996).

¹⁸For an analysis of the rights of immigrants and their claims on the host country's resources, see Freeman (1986).

Figure 1.



and national income is ABL_0O , with labor income W_0BL_0 and capital income ABW_0 . Assume that emigration equals $L_0 - L_1$ and labor endowment falls to L_1 . Emigration generates a welfare loss equal to CBD because the emigrants produced CBL_0L_1 and were paid DBL_0L_1 . Capital is used less intensively after emigration, and its marginal product falls. Income of capital falls from AW_0B to AW_1C . It falls by CBD (the loss in income for those left behind), and it falls by W_1CDW_0 due to the increase in labor's marginal product from W_0 to W_1 .

With remittances, the welfare impact on the South is ambiguous. Hamada (1977) has shown that the gain to emigrants is larger than the loss to those left behind. This can be shown with the help of Figure 1. Though the loss to the South from a level of emigration of $L_0 - L_1$ is triangle CBD, the gain to the emigrants is equal to CEBD or twice the loss CBD. Thus, if the welfare of emigrants is part of the South's welfare, emigration results in a welfare gain for the South.

What about the impact of immigration on the North? The initial wage is W_2 . Immigration of $L_0 - L_1$ leads to an increase in the income of the original factors of production by an 'immigration surplus' of CEF because the immigrants are paid their marginal product W_1 (with a wage bill of CEL_0L_1) but add CFL_0L_1 to national income.

Thus, if emigrants' welfare is considered part of the South's national welfare, emigration benefits both the South and the North. This is shown in Bhagwati and Srinivasan (1983) as well.¹⁹ They also show that an immigration quota results in a loss for the North. This can be shown with Figure 1. Assume immigration is restricted to a level $L_0 - L_1' < L_0 - L_1$. It follows that the triangle gain $C'E'F$ is smaller than triangle CEF.

The result that immigration generates a surplus for the natives of the North abstracts from possible distortions and fiscal externalities. Immigrants generate a loss for the North if they pay less than

¹⁹On the other hand, Schiff (1996) shows that, in the presence of social capital, the opposite holds and everyone loses in the case of individual utility maximization. This issue is examined later in the paper.

the average level of taxes and consume more than the average level of public services. For instance, Wildasin (1995) shows that migration can lead to Pareto-inferior outcomes in the presence of redistributive tax policies which transfer income between owners of immobile factors and workers.

What about the effect on fixed factors? If these are privately owned, as in the case of housing, the increased demand caused by immigration generates a net gain for the North's natives since the latter 'exports' housing services to the immigrants.²⁰ On the other hand, fixed factors such as infrastructure and other public goods are common property resources, and immigrants generate negative externalities in terms of increased congestion and depreciation of these public goods.²¹ However, if immigrants are charged the social cost of their use of these resources, then immigration generates a net gain for the North's natives.

iii) Brain drain

The loss to the South from a large emigration of skilled labor (in the absence of remittances) has been examined in the context of the 'brain drain' problem by Johnson (1965, 1967), Grubel and Scott (1966), Bhagwati and Hamada (1974), and Bhagwati and Rodriguez (1975). The focus on skilled labor is based on the view that immigration restrictions in the North are biased in favor of skilled workers so that (legal) migration is often only feasible for the latter.

How important is the brain drain from developing countries? Stalker (1994) reports that sub-Saharan Africa has suffered the most, losing 30 percent of its highly skilled manpower between 1960 and

²⁰This is similar to the 'immigration surplus' generated by the impact of immigration on the demand for capital. Distribution is affected in both cases (labor loses in the case of capital and buyers of housing services lose in the case of housing), but as a net exporter of the services of the fixed factor, the North as a whole gains.

²¹Think, for example, of the impact of a ten percent increase in population on rush hour traffic in Los Angeles or on queues at public health facilities. Usher (1977) provides an estimate of the magnitude of the costs involved in the fact that an immigrant acquires a share of public property in the North. One solution he suggests from the North's viewpoint is to admit migrants as guest workers rather than as citizens or permanent residents.

1987. Among the hardest hit, Zimbabwe has lost nearly 90 percent of the doctors trained since 1980. The Caribbean has been losing between 20 and 40 percent of all university graduates. In order to keep one doctor, Jamaica has had to train 5 and Grenada has had to train 22. In absolute numbers, though, the greatest exodus of professionals has been from Asia. And despite the high unemployment of professionals in the South, governments in a large number of developing countries have provided more subsidies to tertiary education than to primary education (UNDP, 1992).

Grubel and Scott (1966) show that a small brain drain has no welfare consequences for those left behind. This was shown above for the case where distortions are absent. However, as Bhagwati and Hamada (1974) note, if the social marginal product exceeds the private one, as may be the case with some doctors and scientists who generate positive externalities, then there is a loss even in the case of a small brain drain. And the same is true if taxes on skilled labor are higher than the value of labor's consumption of public goods.

The welfare loss associated with the brain drain constitutes the basis for the proposal to tax skilled labor from the South who are working abroad (Bhagwati 1976, 1977, 1978, 1982; Bhagwati and Partington 1976; Bhagwati and Hamada 1982; Bhagwati and Wilson 1989; Hamada 1977; and Mirrlees 1982).

In my view, two issues (in addition to the legal, political and ethical aspects) need to be taken into account in assessing the benefits of a proposal to tax the income of skilled labor working abroad. The first is the cost and effectiveness of tax collection. Setting up a tax collection agency to administer the system in developing countries with scarce qualified administrative resources is not a minor issue. And neither is tax evasion, a problem which is very hard to manage in developing countries even for citizens living in the home country (Bhagwati 1982, 1991a). Unless the North is willing to collaborate, it is hard to see how such a policy could be implemented. The main efforts at immigration control has applied to unskilled rather than to skilled labor, which does not help the South.

Secondly, even if tax evasion by those working abroad can be controlled at a reasonable administrative cost, 'tax evasion' can still occur via reduced remittances. This issue has not been thoroughly examined in the brain drain literature even though remittances have played such an important role in a number of source countries (see Sub-section 2.A). The brain drain literature derives efficiency and equity gains from taxation of the brain drain. Insofar as the tax lowers the propensity of emigrants to remit, the net welfare impact of the tax is smaller and may even vanish.²²

iv) Unemployment

The literature listed so far obtains losses from the brain drain based on the assumption of full employment. An exception is Bhagwati and Hamada (1974) who examine the effect of some institutionally-defined minimum wage (and thus Harris-Todaro-type unemployment). International migration may provide a safety valve and may lower unemployment costs associated with the minimum wage in the South. For instance, Castillo-Freeman and Freeman (1992) conclude that the U.S. minimum wage would have resulted in significant unemployment in Puerto Rico were it not for access to the U.S. labor market.

I examine here the effect of emigration on welfare in the case where the sticky wage and the unemployment are not caused by government labor policy or by restrictions on entry imposed by some organized labor group. A number of sending countries, including Mexico and Morocco, experience high rates of population growth, and are concerned with the economy's inability to generate enough jobs for high-school and college graduates at existing wages, a situation which may be exacerbated by large secondary and tertiary education subsidies. Anecdotal evidence indicates that young people in Morocco

²²The only reference to the impact of the brain drain tax on remittance I came across is Bhagwati, 1991a, pp. 416-17, where it is argued that it is essentially the low-income, low-skill workers who remit, so that the elasticity of remittances with respect to a tax on the brain drain should be low. No mention is made of any existing empirical work on this issue.

have a reservation wage below which they are unwilling to work. They often live at home where their basic needs are taken care of and they are unwilling to take jobs for which they feel over-qualified.

Rapid growth in the labor force which is not accompanied by a commensurate growth in labor demand will eventually result in excess labor supply at the reservation wage. In that case, even large emigration flows do not generate a loss as long as there is unemployment. On the contrary, unemployed people are a drain on the South since their basic needs are satisfied by others. Thus, emigration generates a gain by removing the net claim emigrants had on the South's resources before they left. If the emigrants remit, emigration generates a larger gain. And similarly if there are negative social and political externalities from high unemployment.

Emigration has in fact operated as a safety valve in many countries. For instance, Egypt, Jordan, Turkey and the former Yugoslavia have followed policies which promote rather than hinder emigration. Russell (1993) states that governments pursuing such policies have benefitted from large flows of remittances, lower unemployment and lower costs of generating new sources of employment (which are often in the public sector). Though such policies may mainly affect unskilled labor, Russell argues that public support for education and training has helped promote emigration. Of course, such a strategy is not without risks. One such risk is that the demand for foreign labor may change rather quickly, as was caused by the fall in oil prices in the early 1980s and the Gulf war in 1990. Another risk is that large-scale emigration may be perceived as a failure to generate jobs at home and may have political costs.

In the North, rising unemployment has led to stronger restrictions on immigration, with preference given to labor endowed with substantial human and/or financial capital. Stalker (1994) examines schemes whereby a number of countries - including Australia between 1981 and 1991, Canada since 1986, New Zealand since 1987 and the U.S. since the 1990 Immigration Act - have offered visas conditional on immigrants bringing sufficient capital to employ themselves and others. The U.S. scheme has had few takers: it offered 10,000 visas a year but only a few hundred people applied. Australia's

scheme was terminated in 1991 because only 4 percent of all immigrants came under that category and because the scheme was used to launder money. The only scheme which seems to have been successful is that of Canada, with some 10,000 new full-time jobs attributed to it by 1990. Canada also has an "immigrant entrepreneurs" program where the visa is conditional on the immigrants providing jobs for non-family members. This scheme led to the creation of 12,700 new businesses and 70,000 new jobs between 1986 and 1990.

v) Capital flows and migration

In the absence of taxes or externalities, the North loses from an immigration quota compared to free immigration. On the other hand, the North gains from a quota on capital flowing to the South. Why this asymmetric result? The reason is that the outflow of capital from the North drives the return to capital in the South down so that the marginal return to the North's capital in the South is lower than its average return, and the optimum for the North is to use a quota (or tax) to equate the marginal return of the North's capital in the South to its average return in the North.²³ The outflow of labor from the South depresses the wage in the North. This generates a negative externality for the South, but generates a gain for the North. Thus, the North has an incentive to allow free immigration.²⁴

On the other hand, an optimal tax on immigration (or an optimal quota auction) will raise the North's welfare compared to free immigration. And in a brilliant two-page paper, Ramaswami (1968) showed that the natives of the North are better off under a monopsonistic tax on immigrants than under a monopolistic tax (or restriction) on capital outflows. His argument is as follows.

Assume an optimal outflow of capital K_0 from the North to the South. Assume that K_0 employs

²³Note that the average return paid by users of capital is the capital's marginal product. Hence, the marginal return to capital is the marginal to the marginal product curve.

²⁴And the benefits from free immigration are even larger if immigrant welfare is considered part of the welfare of the North.

an amount of labor L_0 in the South. Now take that amount K_0 with the corresponding amount of labor L_0 back to the North, with K_0/L_0 equal to the capital-labor ratio in the South (which is lower than the ratio K_1/L_1 in the North). Then, combining K_0 and L_0 and paying each its marginal product generates the same return to K_0 and to L_0 as they obtained in the South, with no change in the North's income. However, the North can do better through resource reallocation and adoption of a uniform capital-labor ratio for all of its output (since the return to K_0 is larger than the return to the rest of the North's capital). Consequently, there exists a tax on immigration - the one which restricts immigration to the level L_0 - which generates more income for the North than the optimal tax or restriction on capital outflow.

Calvo and Wellisz (1983) show that the higher welfare obtained under monopsonistic immigration taxes can also be obtained in a different way. Assume once again that an amount K_0 of the North's (optimally restricted) capital employs an amount L_0 of labor in the South, but that the North orders a freeze on the employment of Southern labor by the North's capital in the South at the level L_0 . Then, if the North allows the North's capital to move South freely, it will do so until L_0 employs capital from the North in the same proportion K_1/L_1 as is employed in the North. In that case, the same level of welfare obtains as under the monopsonistic immigration tax. Thus, the North can achieve that level of welfare without letting any foreign workers in.

Bhagwati and Srinivasan (1983) generalize Ramaswami's result. From the viewpoint of the welfare of the North's natives, they obtain the following ranking of policies: 1) perfectly-discriminatory tax on immigrants; 2) optimal tax on immigrants; 3) optimal tax-cum-restriction on capital outflow; 4) free migration or flow of capital; and 5) restriction on immigration.

Ramaswami, Calvo and Wellisz, and Bhagwati and Srinivasan assume that it is only the North which can restrict factor movements to raise its income. Cheng and Wong (1990) examine the issue in a strategic framework where both the North and the South can restrict factor movements. They show that Ramaswami's result holds for some initial factor endowment configurations but not for others.

vi) Evidence

Evidence on the welfare impact of migration is scarce and seems limited to the North. Borjas (1995a) estimates the impact of immigration on national income of the U.S. He shows that the share of triangle CEF (see Figure 1) in national income is equal to $s \cdot e \cdot m^2 / 2$, where s is the share of labor in national income, e is the inverse of the absolute value of the price elasticity of the demand for labor, and m is the fraction of the labor force made up by immigrants. For the U.S., Borjas uses values of $s = 0.70$, $e = 0.30$, and $m = 0.10$. The 10 percent increase in the labor force generates an 'immigration surplus' in the order of 0.1 percent of GNP, i.e., about \$7 billion or less than \$30 per person per year.²⁵

Redistribution between labor and capital is some twenty times larger than the immigration surplus (Borjas, 1995a). Labor loses 1.9 percent of GNP or \$133 billion, and capital gains \$140 billion. These numbers probably explain why the debate on immigration has focused on the impact on the income of native U.S. workers rather than on the impact on GNP.

Borjas (1994) estimates the net annual fiscal cost of benefits to immigrants of public services (education, health, welfare, transportation, etc.) to be equal to \$16 billion.²⁶ Consequently, the net impact of immigration on GNP may even be negative. The issue of whether immigrants generate a net fiscal cost or surplus is controversial and as yet unresolved. For instance, Simon (1992) argues that legal immigrants to the U.S. contribute more in taxes than they receive in benefits (up to U.S.\$ 1300 annually per immigrant family), and that illegal immigrants contribute more.

Blau (1984), Jensen (1988), Borjas (1995c), and Borjas and Trejo (1991) provide evidence of the increasing number of immigrants who are beneficiaries of welfare programs in the U.S. Immigrant households were somewhat less likely than native households to receive cash benefits in the 1970s, but

²⁵Macmillen (1982) reports welfare gains from immigration of 0.1 percent of GNP for the U.K. in 1974 and of over 1 percent for France in 1971.

²⁶Note that he does not include the possible cost from higher congestion and depreciation of public infrastructure such as roads, hospitals and schools.

by 1990, 9.1 percent of the former received cash benefits compared to 7.4 percent of the latter.

This may be due in part to the changing national origin of immigrants. More recent immigrants to the U.S. are generally less skilled and less paid, and they tend to contribute less and take more. Borjas (1990) finds that in 1940 (1970) (1980), the average immigrant had about one year more (the same level) (one year less) of schooling than the typical native. This is primarily due to the changing mix of national origins (UNDP, 1992). In the 1950s and 1960s, most immigrants came from Europe with, for instance, those from the U.K. having close to 11 years of schooling. By the 1990s, most immigrants came from developing countries with, for instance, less than 7 years of schooling for those from the Philippines and about 4 years for those from Mexico. On this issue, see also Borjas (1992a), Borjas and Freeman (1992), and Borjas and Trejo (1993).

The strain on the budget may depend on the region of immigration as well. For instance, 60 percent of all women giving birth in Los Angeles county hospitals in 1993 were born in Mexico (Muller, 1993). Some estimates put the annual cost of immigration to the budget of the state of California at U.S.\$ 5 billion. The story is dramatically different in the New York, where the 1980 Census indicates that 13 percent of native households received public assistance, while only 8 percent of immigrants did (Muller, 1993). Thus, the overall picture on the net fiscal impact of immigrants in the U.S. is not clear.

However, Census data only provide information on cash benefits. Borjas and Hilton (1996) show that even though the immigrant-native difference in the probability of receiving cash benefits is small (9.1 percent versus 7.4 percent in 1990), the gap widens considerably once other programs (including Medicaid, Food Stamps and housing subsidies) are included (20.7 percent for immigrants versus 14.1 percent for all natives and 10.5 percent for white non-hispanic natives).

Given that the EU typically provides a higher level of social services than the U.S., the per-

immigrant cost of providing these services is probably higher in the former.²⁷ On the other hand, immigrants may provide a higher benefit for the EU in terms of integrating the labor market. The EU's labor market is very fragmented compared to that in the U.S. Eichengreen (1993) argues that the pool of foreign labor can provide an important safety valve and regional adjustment mechanism for the EU, especially in view of the move towards monetary union.

Based on 1970 Census data for the U.S., Grossman (1982) examines the degree of substitutability between natives, second-generation natives, immigrants and capital. She finds that both second-generation workers and immigrant workers are substitutes for native workers. The degree of substitution between native workers and second-generation workers is about fifty percent larger than between immigrant workers and second-generation workers, and about three times larger than between native workers and immigrant workers. This is consistent with Chiswick's (1978) finding that over time immigrants become economically more like natives. As for capital, Grossman finds that it is complementary with the three types of labor, but the degree of complementarity is strongest with immigrants and weakest with natives.²⁸

Given Grossman's finding that immigrants are strong substitutes for unskilled workers, weak substitutes for skilled workers and complements for capital, it is easy to see why organized labor is opposed to immigration while business generally favors it. Skilled labor should not care too much one way or another: it seems to lose slightly on the production side but gains in terms of consumption as

²⁷On the other hand, a 1970 study concluded that immigrants in the U.K. receive fewer welfare and retirement benefits than the native population, and data from the Labour Force Survey shows that 70 percent of unemployed men from ethnic minorities claimed unemployment benefits while the number for white men was 74 percent (Jones, 1993). Of course, the fact that immigrants use fewer public services than natives does not necessarily imply that the former are not a net burden on the budget since they might also be earning a lower than average income and might be contributing less in taxes.

²⁸Since immigrants have the lowest level of education of the three groups, this may seem to contradict the finding by Griliches (1969) that education is more complementary with capital than with unskilled labor, though Grossman's result may be due to other characteristics of immigrants.

lower unskilled wages reduces the cost of non-tradables.²⁹

Note that immigration only generates a surplus for natives because natives differ from immigrants in terms of the factors they own. If immigrants brought with them a per capita amount of capital equal to that owned by the natives, then the overall capital-labor ratio would remain unchanged, wages would be unaffected and there would be no immigration surplus. Similarly, for emigration to generate a loss, emigrants must differ from those remaining in the country in terms of factor endowment.

vii) Group effects

A number of studies have examined the impact of group effects in the context of migration. The effect on work effort and economic performance of differential rights and incentives faced by immigrant groups and natives has been examined in two-period models by Galor and Stark (1990) and Stark (1991). Galor and Stark (1990) show that the likelihood of return migration leads immigrants to save more than the native born. Schaeffer (1995) and Djajic and Milbourne (1988) use a similar framework, with the former adding differences in degrees of assimilation to the model and the latter comparing migrants' behavior in the host country with their behavior after they return home.

Fernandez Kelly (1995) argues that the expected duration of stay is one of the elements of the social and economic structure which can explain the degree of success of different immigrant groups. For instance, Japanese immigrants to the U.S. were highly entrepreneurial from the start compared to Mexican immigrants with similar levels of human and material capital and faced with similar

²⁹U.S. immigration laws were amended in 1965. This led to a change in the main source countries from northern and western European countries in the 1950s to Latin American and Asian developing countries in the 1980s. Evidence on the impact of post-1965 immigration on the U.S. labor market is provided in Abowd and Freeman (1991). They report a small impact of immigration of low-skilled labor on earnings and employment opportunities of natives with similar education and skills. They find small differences in the economic situation of natives across localities with different immigrant flows. However, the latter may simply reflect the fact that natives are mobile and move in response to an inflow of immigrants in a given locality. Borjas, Freeman and Katz (1992), who account for this effect, find that immigration has a substantial impact on the economic position of natives.

discrimination by the dominant group. Fernandez Kelly explains the difference in part by the fact that Mexicans typically envisaged returning home, while - given the long distance from home and high migration cost - the Japanese migrated with the intention to stay. On the costs and benefits of belonging to immigrant communities, see also Roberts (1995).

Lazear (1995) examines the benefit of a common language and culture in facilitating exchange. He argues that a) immigrants have an incentive to learn the majority language in order to increase the pool of potential partners for exchange;³⁰ b) the incentives are larger where the immigrant group is smaller and the share of the majority in the total population is larger; c) government programs to protect minority culture lower the incentive to assimilate; d) externalities, which abound in this area, are improperly internalized and the market solution is inefficient (for instance, the immigrant who must decide whether to learn the majority language is unlikely to take into account the benefits for the majority); and e) policy which encourages diverse cultural immigration over concentrated immigration will raise the welfare of the native population. Based on U.S. Census data, Lazear finds that the likelihood that an immigrant will learn English is inversely related to the proportion of the local population which speaks his/her native language. Similarly, Chiswick and Miller (1995) find that fluency in the dominant language in Australia, Canada, Israel and the U.S., falls as the minority language concentration increases.

Group effects associated with the brain drain may affect growth. Following Lucas (1988), assume that the productivity of human capital depends on the individual level of human capital as well as on its average level in the economy. Then, a brain drain lowers the average level of human capital, and lowers the rate of economic growth in the steady state. This result is obtained by Haque and Kim (1995).

³⁰That immigrants have an incentive to learn the majority language is confirmed by Chiswick and Miller (1995) who find that the earnings differential between those who are fluent in the dominant language and those who are not is, *ceteris paribus*, 16 percent in the U.S. and somewhat less in Australia, Canada and Israel.

They conclude that the likelihood of a brain drain is another argument for focusing educational subsidies on the early years of schooling rather than on higher education where the expected positive externalities may not materialize due to emigration.³¹ Nevertheless, as reported in UNDP (1992), a large number of developing countries of Latin America, francophone Africa, East Asia and the Pacific provide more subsidies to tertiary education than to primary education despite high levels of human capital flight.

Other studies have examined group features of migration in an endogenous growth framework (e.g., Barro and Sala-I-Martin, 1992, 1995; Borjas, 1992b, 1995b; Galor and Stark, 1994). Borjas (1992b) examined the impact of ‘ethnic capital’ and showed that ethnicity acts as an externality which slows the convergence of human capital across ethnic groups over time. Borjas (1995b) further shows that ethnic capital is closely linked to ethnic neighborhoods.

B. Two-Sector Model.

In the one-sector model used in Section 3A above, the welfare effects from large migration flows in the absence of distortions and remittances were caused by the diminishing returns associated with the one-good two-factor model. Assume now a Heckscher-Ohlin model with two factors and two goods. Assuming that the country of emigration in the South is small. Factor prices are determined by world output prices and trade policy. Emigration has no impact on factor prices as long as the capital-labor ratio remains in the cone of diversification: the fall in labor supply is matched by an equal reduction in labor demand which is effected through a change in the composition of output from the labor-intensive exportable towards the capital-intensive importable (Rybczynsky Theorem). Consequently, migration has no impact on the welfare of those in the sending or destination country, unless distortions and/or externalities are present (or unless migrants remit).

³¹ Another efficiency argument is the higher return on investment in primary education. An argument based on equity considerations is that everyone should have access to a minimum level of education.

The impact of migration on welfare is examined below in the case of trade distortions in sub-section (I) and in the case of externalities in sub-section (ii). In sub-section (iii), the welfare impact of both trade and migration policy is examined in the case of group effects.

i) Trade distortion

What is the impact of migration on welfare in the presence of non-optimal trade policy? This issue was examined for the case of international capital mobility in Brecher and Diaz-Alejandro (1977) and Brecher and Choudhri (1982). Note that a tariff constitutes a distortion in the small-country case, while in the large-country case free trade constitutes a distortion (Bhagwati, 1987).

I first examine the impact of a small, exogenously determined, amount of migration. Assume a tariff imposed by a small, labor-abundant, country. The tariff results in an increase (decrease) in production of the capital-intensive importable (labor-intensive exportable). Migration moves production further away from the optimum (with a reduction in the production of the exportable and an increase in the production of the importable) and results in a loss for those left behind.³² Assume now a large country pursuing a free trade policy. The optimal policy is a tariff on imports or, equivalently, an export tax. Under free trade, production of the exportable (importable) is too large (small) compared to the optimum. In that case, emigration generates a welfare gain by moving production in the direction of the optimum.

Assume now that migration is determined endogenously. Assuming zero migration costs, trade and migration are substitutes. A tariff imposed by a small country results in a welfare loss. The tariff lowers the domestic wage and results in migration. In the small-country case, factor prices are not

³²If the emigrant was a net contributor to society (say, because of positive externalities or because he/she paid more taxes than the cost of public services consumed), then the loss is bigger. On the other hand, if the emigrant remits or if his/her welfare is considered part of the South's national welfare, then the effect is ambiguous.

affected by migration as long as trade takes place and there is no specialization. As migration continues, production of the exportable falls and that of the importable increases, output moves further away from the optimum, and welfare for those left behind declines. Eventually, autarky is reached. As migration continues and the production of the importable increases, its relative price falls below the tariff-inclusive world price, the wage rate increases and the return to capital falls. The movement of product and factor prices towards their free trade value generates a gain for those left behind. The higher wage rate results in a slowdown in migration. As migration continues at the slower pace, the relative import price eventually reaches the (tariff-exclusive) world price, at which point factor price equalization is reached and migration stops. This is Mundell's (1957) result: the effect of the trade barrier is entirely overcome through factor mobility. All prices are back at their free trade levels and welfare for those left behind is unchanged.

On the other hand, Lopez and Schiff (1996) have shown that, under migration costs and financing constraints, a tariff will raise (lower) outmigration of skilled (unskilled) labor. This is unlikely to be seen by the South as compensating for the negative impact of the tariff. Rather, it is likely to be seen as further lowering welfare because of the loss in the high tax base and in the positive externalities associated with emigration of skilled labor.

ii) Externalities

In the case of externalities, migration does affect welfare. The static and dynamic issues associated with the brain drain have already been discussed in Sub-section 3.A.iii.

Rivera-Batiz (1982) shows, in a Salter-type model of a small open economy with traded and non-traded goods and with international capital and labor mobility, that emigration lowers the welfare of those left behind if the amount of capital owned and removed by the emigrants differs from the economy's capital-labor ratio. The reason is that emigration generates a negative externality by depriving those left

behind from the opportunity to trade with the emigrants in the market for non-traded goods.³³ Djajic (1986) extends the analysis of Rivera-Batiz (1982) by including remittances. He shows that those left behind gain if remittances exceed a critical level even if they do not receive the remittances themselves.

iii) Trade policy, migration policy, and group effects

Not much has been written on the welfare impact of trade and migration policy in the presence of group effects. This is examined in Schiff (1996) where group effects are associated with social capital. The concept of social capital was first introduced by Coleman (1987, 1988, 1990). It can be defined as "... the set of elements of the social structure that affects relations among people and are inputs or arguments of the utility and/or production function" (Schiff, 1992). These elements include social norms, attitudes, values, language and culture.

Evidence on the impact of social capital on migration is limited. Cashin and Sahay (1996) find that income in the destination state has a much smaller impact on inter-state migration in India in the period 1961-1991 than the impact found in studies of migration across states of the U.S. between 1900 and 1987 and across prefectures in Japan between 1955 and 1985. The impact in India is closer to that for migration across regions of Europe. The authors argue that the most important factors explaining the difference in response in the U.S. and Japan on the one hand, and Europe and India on the other, are the social, cultural and linguistic barriers in the latter. Similarly, Faini and Venturini (1993b, p. 440) state that "... cultural, social and linguistic differences ... may at least partly account for the much lower labor mobility in Europe than in the U.S." Thus, it seems safe to assume that these barriers are likely to play an important role in North-South migration decisions as well.

³³Rivera-Batiz (1989) distinguishes between skilled and unskilled labor, and shows that if emigrants possess and take with them a large fraction of physical or human capital, unskilled labor's real wage is likely to fall. The same occurs under scale economies and imperfect competition if emigration reduces the scale of operation of domestic firms.

The analysis in Schiff (1996) is carried out under two behavioral assumptions: either the emigrants maximize individual utility with no concern for the welfare of others, or migration is part of a collective welfare maximization process in the South so that all migration externalities for the South are internalized. In reality, migrants internalize some externalities (e.g., with respect to their family) but probably not all.³⁴ Following Schiff (1992a) and Becker (1996), Schiff (1996) assumes that social capital enters the utility function. Bliss (1994) makes a similar assumption. He states that migration may generate externalities through its effect on the survival of local cultures and life-styles. Hill (1987) and Faini and Venturini (1993b) also assume that social capital (such as preference for living in one's own country) enters the utility function, though they do not examine externalities and group effects. Others (e.g., Coleman 1988, Putnam 1993) have modeled social capital on the production side. Making the latter assumption complicates the analysis but does not affect the main findings.

As in most of the literature, migration policy is considered to be an issue for receiving countries, not for sending countries.³⁵ The basic framework used is the Heckscher-Ohlin model, to which three features have been added: a higher level of technology in the North than in the South, international migration, and social capital. There are no credit constraints so that trade and migration are substitutes.

How does migration affect the level of social capital in the various groups? Most people have a preference for associating with those who share the same values, language and culture. In the sending country S (South), social capital SK_s decreases with the level of migration because it reduces the size of the group of people of similar background and values with whom each member of the group can interact. In the receiving country N (North), social capital SK_n depends negatively on the migration level. The assumption is that the local population and the immigrants differ significantly in language, values and

³⁴For an analysis of the level -- individual, household or larger unit -- at which migration decisions are made, see Stark (1991).

³⁵Exceptions include Bhagwati (1972, 1976), Djajic and Milbourne (1988), and Baldwin and Venables (1994).

culture, so that an increase in migration lowers the North's social capital. These two types of externalities are also discussed in Layard et al. (1992).³⁶

Migration results in a loss of social capital ($SK_m < SK_s$). Additional migration has two opposite effects on the migrant's social capital, SK_m . First, SK_m increases directly with migration because the migrants benefit from the interaction with a larger number of people from their own group. Second, as migration increases, the natives in the North become less hospitable, and that leads to a reduction in SK_m .

The main findings are presented under the four alternative assumptions: A) free migration and no internalization of migration externalities, B) free migration and full internalization, C) optimal immigration tax by the North and no internalization, and D) optimal immigration tax and full internalization.

A. Free migration and no internalization

- 1) All groups are worse off under free migration than with total restriction on migration;
- 2) all groups lose from imposing a tariff in the South or in the North; and
- 3) all groups lose from a decrease in migration costs.

Why do all groups lose from freeing migration? Income in the South is not affected by migration in the Heckscher-Ohlin model as long as factor endowments remain in the cone of diversification. However, social capital in the South SK_s falls with migration. Hence, those left behind in the South lose. Note that there are no remittances in this case to compensate for the loss of those left behind because

³⁶Concern with the cultural impact of immigrants is not new, as the quote from Benjamin Franklin at the start of the paper indicates. Moreover, Chinese who started to arrive to the West Coast with the gold rush in the 1850s were eventually banned by the Chinese Exclusion Act of 1882 (Stalker, 1994). And on the East Coast, complaints were raised against Catholic immigration who lacked the 'protestant work ethic' and who were accused of loyalty to the papacy rather than to the U.S. Stalker argues that assimilation was greatly assisted by the exclusion of non-Europeans in the U.S. until 1965, Canada until 1962 and Australia until 1973. On the other hand, recent immigrant groups in the U.S. have been promoting multiculturalism as an alternative to assimilation. This has been causing concern among members of the native majority.

emigrants maximize their individual utility and do not take the welfare of others into account.

Why do emigrants lose? They migrate with the expectation to benefit: the higher income in the North must more than compensate for the loss of social capital. However, unless there is a corner solution where all of the South's population emigrates to the North, in equilibrium, the utility of the emigrants and of those left behind must be the same. And since the latter lose, the former must lose as well. How does that happen? As the stock of Southern immigrants increases, Northerners become increasingly less hospitable to the immigrants and the social capital of immigrants SK_m starts falling. As migration proceeds, the utility of immigrants starts falling faster than the utility of the non-emigrants, until utilities are equalized. Finally, the Northerners lose since SK_n falls.

B. Free migration and full internalization

- 1) National welfare for the South NW_s (emigrants plus non-emigrants) is higher and welfare for residents of the North (U_n) is lower under free migration than with total restriction on migration;
- 2) NW_s is higher than under individual utility maximization, but the effect on U_n is ambiguous;
- 3) a tariff by the South lowers NW_s and U_n ; and
- 4) NW_s increases and U_n falls with a tariff by the North or with a fall in migration costs.

Given full internalization of migration externalities by the South, free migration and a fall in migration costs raise the South's national welfare NW_s . The effect of internalization on the level of migration is ambiguous. On the one hand, internalization lowers the level of migration because the loss in social capital is internalized. On the other hand, migrants remit in the case of internalization and that raises the benefits of migration. Consequently, the effect on the North's welfare is ambiguous as well.

C. Optimal immigration tax and no internalization

- 1) The North is better off than under either free migration or no migration;

- 2) the Southern emigrants and non-emigrants are better off than under free migration but worse off than under total restriction on migration;
- 3) a tariff or a decrease in migration costs lowers welfare in the South for emigrants and non-emigrants and raises welfare in the North; and
- 4) all groups lose under illegal immigration which increases with the immigration tax.

Why do emigrants and non-emigrants of the South gain from an immigration tax? The tax has no impact on the non-emigrants' income. But since it reduces migration, it results in a higher level of social capital SK_s and a higher welfare for the non-emigrants (as well as for the emigrants in equilibrium).

The North gains from a tariff in the South or from a fall in migration costs because both raise the demand for migration, and the North can then extract a higher monopoly tax on immigrants from the South.

D. Optimal immigration tax and full internalization

- 1) The South's national welfare is higher than under individual utility maximization while the effect on the North's welfare is ambiguous;
- 2) both the South and the North gain from a decrease in migration costs;
- 3) the South loses and the North gains from a tariff in the South; and
- 4) the North loses and the South gains in the case of illegal migration which increases with the migration tax.

Two results hold irrespective of the degree of internalization of the migration externalities: the South gains from trade liberalization in either the North or the South, and the North gains from imposing an immigration tax. The policy implications are clear: the South should liberalize trade while the North should impose an immigration tax. Immigration restrictions have been proposed by Salt (1991), Layard et al. (1992) and Zimmerman (1995) for the EU and by Becker (1987) for the U.S. Following the 1973

oil shock and the subsequent recession and rise in unemployment in Europe, policy changed from one of encouraging immigration to what Zimmerman (1995) has called a "'Fortress Europe' immigration policy". He describes many Europeans as feeling that they belong to a club and that immigrants should pay an entry fee for access to the club and its valuable resources (i.e., high wages). He argues that such an instrument could be used to control immigration flows. In his report to the Council of Europe, Salt (1991) also advocates establishing controls on migration. Similarly, Becker (1987) has proposed auctioning U.S. immigrant visas.

4. Concluding Comments.

The question of substitutability or complementarity between trade and migration does not have an unambiguous answer. And the same holds for the impact of migration on welfare.

The simple Heckscher-Ohlin model implies substitution between trade and migration. Complementarity can be obtained under conditions which are particularly relevant to North-North relations, such as economies of scale and sector-specific technological differences. Migration costs and credit constraints seem more relevant in the case of North-South relations. These conditions may result in complementarity between migration and trade, between migration and capital, and between migration and foreign aid. Complementarity is more likely the higher the migration costs, the tighter the credit constraints, and the lower the skills and income of potential migrants. Hence, opening markets in the North and providing foreign investment and foreign aid is more likely to slow down migration from Eastern Europe to the EU than from Africa to the EU or from Latin America to the U.S. And it may worsen the skill composition of migration from Africa to the EU and from Latin America to the U.S.

On welfare, in the one-good model, migration generates a loss for those left behind in the sending country and an 'immigration surplus' for the natives in the destination country. The loss for those left behind - which may be due to intra-marginal migrants paid less than the value of their marginal product,

higher taxes on them than the value of public services they consume, or a loss in positive externalities associated with the brain drain - does not include the benefit from remittances. The 'immigration surplus' or gain in the destination country does not include possible fiscal externalities and increased congestion and depreciation of public goods. On the other hand, the North gains from migration of skilled labor because it does not have to pay for the skills. In this static framework, distributional effects - measured in terms of rectangles - are likely to be much larger than the welfare effects - measured in terms of triangles. For the U.S., according to Borjas (1995a), the loss (gain) in labor (capital) income is on the order of twenty times larger than the welfare gain.

In the small-country Heckscher-Ohlin 2x2x2 model, migration has no impact on income under free trade in either the sending or destination countries as long as trade takes place and there is no specialization. In such models, distortions or group effects and externalities are required for migration to generate income (and growth) effects. For instance, if there are human capital externalities, with the productivity of an individual's human capital positively related to the average level in the economy, then human capital flight or brain drain will have a negative impact on income and - in an endogenous growth framework - on the long-term growth of the economy. This may provide an additional argument for freeing trade so as to accelerate growth and reduce human capital flight, and for focusing educational subsidies on the early years of schooling rather than on higher education.

In the case of externalities associated with the impact of migration on social capital, the model presented shows that if they are not internalized, as when social capital is an input in the production function, then all groups - including the emigrants - lose from free migration. If the externalities are internalized, the South - including the emigrants - gains from free migration while the North loses. The model provides two unambiguous policy implications irrespective of the degree of internalization of the migration externalities: the North gains from imposing an optimal immigration tax and the South gains from freeing trade.

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